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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/480,173

01/10/2000

Risto Aalto

PM 258574

3987

7590

12/16/2004

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 MCLEAN, VA 22102

EXAMINER

NGUYEN, LEE

ART UNIT	PAPER NUMBER
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2682

DATE MAILED: 12/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/480,173

Applicant(s)

AALTO, RISTO

Examiner

LEE NGUYEN

Art Unit

2682

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 July 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-16 is/are allowed.
- 6) ☒ Claim(s) 17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This action is responsive to the communication filed 07/28/2004.

Terminal Disclaimer

1. The terminal disclaimer filed on 7/28/2004 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of US Patent 6,091,955 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujii et al. (EP 0531090) in view of Royer (U.S. 5,506,869).

Regarding claim 1, Fujii teaches a cellular network including allocated radio frequencies reused in cells (fig. 16C), comprising: said allocated radio frequencies (channels 1out, 2out, 3out and channels 1in, see fig. 16C)

being divided into regular radio frequencies for which lower frequency reuse is utilized to achieve a seamless overall coverage (regular channels 1_{out}, 2_{out}, 3_{out} are reused or repeated at a distance of three first small cells which are macrocells used to achieve seamless overall coverage, see fig. 16C), and super-reuse frequencies to which high frequency reuse is applied to provide a high traffic carrying capacity (super-reuse channels 1_{in} are reused or repeated at a distant of one first small cell, i.e., repeat more often than the regular channels, (fig. 16C) which is high traffic carrying capacity than the regular channels, col. 8, lines 12-15); at least some of said cells (first small cell, fig. 16C) having both at least one regular frequency 1_{out} (fig. 16C) and at least one super-reuse frequency 1_{in} (fig. 16C), so that at least one regular frequency 1_{out} is intended to serve primarily in cell boundary regions (see first small cell in fig. 16C) and said at least one super-reuse frequency 1_{in} is intended to serve primarily in the vicinity of a base station (see third small cell in fig. 16C). Fujii also teaches a controller which controls traffic load distribution in a cell between said at least one regular and said at least one super-reuse frequency by intra-cell handover (handover between a first small cell and a second smaller cell, col. 7, lines 7-24). The intra-cell handover in Fujii is induced by signal

quality measurement (received levels, col. 7, lines 7-24). Fujii differs from the claim of the present invention in that the handover is induced from estimated interference, which is not a suitable basis for deciding when to perform a handover. However, the technique of using estimated interference for deciding a handoff or handover is conventionally well known in the art, which is taught by Royer in col. 1, lines 51-55 and col. 4, lines 20-37, in which the interference levels estimated between base stations' frequencies are used decide when to handover mobile units from one base station (serving cell) to adjacent base stations (adjacent cells). From this knowledge, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the teaching of Royer to the handover of Fujii in order to provide suitable basis for deciding when to perform a handover to mobile units (col. 1, lines 51-55). Fujii as modified teaches the estimated interference on both the regular frequency and the super-reuse frequency, i.e., a serving cell and an adjacent cell, (estimating carrier-to-interference ratio at cellular base stations, col. 1, lines 51-53 of Royer). Fujii as modified also teaches that a radio frequency assigned in handover from another cell, i.e., intra cell handover, (adjacent second small cell, fig. 16C and figure 18 of Fujii) is a regular frequency (channel 2out

changes to channel 1out when handover, fig. 16C of Fujii). Fujii as modified also teaches in another embodiment that a BCCH frequency (control channel) of the cell is a regular frequency (a control channel is common to a first small cell and a second small cell, col. 6, line 57 through col. 7, line 6, which is a regular frequency assigned to the larger first small cell, i.e., the cell). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide control channel with a regular frequency in order to improve spectrum efficiency (col. 7, lines 3-6).

Allowable Subject Matter

4. Claims 1-16 are allowed.

Claims 1, 9 and 16 are allowed as indicated in the argument.

Response to Arguments

5. Applicant's arguments filed 7/28/2004 concerning the rejection of independent claim 17 have been fully considered but they are not persuasive.

Regarding the language of independent claim 17, the claim does not recite the similar limitations as claimed in independent claims 1, 9 and 16.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LEE NGUYEN whose telephone

number is (703)-308-5249. The examiner can normally be reached on 8:00 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, VIVIAN CHIN can be reached on (703) 308-6739. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

 12/8/04
LEE NGUYEN
Primary Examiner
Art Unit 2682